

State of Alaska  
Department of Fish and Game  
Nomination for Waters  
Important to Anadromous Species

1992  
Year of Revision

Name of Waterway MUS RIVER  
AWC# of Waterway 334-30-11000-2532-3551  
AWC Volume & Number Interior  
USGS Quad OPHIR C-4 D-4  
Addition X Correction \_\_\_\_\_  
Deletion \_\_\_\_\_ Change \_\_\_\_\_  
Change to \_\_\_\_\_ Atlas  
Catalog  
Both X

Approved

[Signature] 12-19-91  
Regional Supervisor Date

ED Wein 93 002 12-16-92  
Drafted

[Signature] 12/18/92  
Drafted

Species	Date(s) Observed	Spawning	Rearing	Migration
Coho salmon	Aug 91		X	
Chinook salmon	Sept + Oct 91			X
Chum salmon	8-9-91, Sept + Oct 91	X		

Comments: Provide any clarifying information, including number of fish observed, location of fish survey data, etc.

See attached information from report by  
J. Morrell, Northern Ecological Services, to  
North Pacific Mining Corporation  
Coho juveniles were also observed by  
P. Welen Scannell in July 1991.

Attach a copy of a map showing location of mouth and upper points of each species, specific stream reaches identified for spawning or rearing, locations of barriers, such as falls. Attach a copy of the fish survey data, if available.

Name of Observer (please print) John Morrell  
Date: \_\_\_\_\_ Signature: [Signature]  
Address: Northern Ecological Services

ALASKA DEPT. OF  
FISH & GAME

DEC 24 1991

REGION II  
HABITAT DIVISION



December 12, 1991

Phyllis:

Enclosed are two copies of the report *Aquatic resources assessment study, Illinois Creek gold project* for your files.

It is obvious that Illinois Creek should be a candidate for inclusion in the *Anadromous fish stream catalog*.

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**FINAL REPORT**

**AQUATIC RESOURCES ASSESSMENT STUDY  
ILLINOIS CREEK GOLD PROJECT**

**Prepared for**

**North Pacific Mining Corporation  
Anchorage, Alaska**

**FINAL REPORT**  
**AQUATIC RESOURCES ASSESSMENT STUDY**  
**ILLINOIS CREEK GOLD PROJECT**

by

**John W. Morsell**  
**Northern Ecological Services**  
**Anchorage, Alaska**

**Prepared for**  
**North Pacific Mining Corporation**  
**Anchorage, Alaska**

**December, 1991**



## INTRODUCTION

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#### Habitat Suitability

Illinois Creek is a clear water stream with very constant flow as indicated by moss and grass growing on the tops of boulders in midstream that were only a few inches above stream level. Groundwater apparently is the major water source. Of particular interest is the fact that a warm spring (66 degrees F.) located immediately upstream from the mine road crossing increases flow in the stream by 10-20 percent and undoubtedly affects downstream water temperature with the greatest relative effect expected to occur in the winter. Water temperature at headwaters springs was in the low 40's which would also provide a moderating influence in winter.

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Spawning habitat for salmonid fish is limited by the shortage of gravel areas. The stable temperature and flow regime resulting from groundwater input likely enhances the value of the potential spawning areas that do exist.

Abundant caddis fly larvae and algae suggest that the creek is unusually productive relative to other headwaters stream areas in interior Alaska. This productivity combined with the high number of juvenile coho salmon would imply that Illinois Creek provides high quality rearing habitat for the salmon. The creek also provides feeding habitat for adult and sub-adult Arctic grayling. No small grayling were observed possibly due to competition from the aggressive juvenile salmon. The downstream areas of the creek would probably be less productive of fish food organisms because of the relatively sterile sand bottom. However, the abundance of woody debris may act to offset the unproductive substrate.

#### DISCUSSION AND CONCLUSIONS

Illinois Creek, while small, is an unusual body of water and provides high quality rearing habitat for coho salmon throughout its length and at least some spawning habitat for chum salmon at

the upper end of the stream.

Estimates of absolute density of juvenile coho salmon were not conducted for this study; however, the minnow trap catch-per-unit-effort is very high when compared to other studies done in productive salmon streams (Environmental Research and Technology 1984; Wadman and Delaney 1979). Growth rate of 0+ and 1+ coho salmon appears to be somewhat faster than occurs in the Little Susitna River in southcentral Alaska (Wadman and Delaney 1979).

The number of chum salmon spawning in Illinois Creek in 1991 was small and the scarcity of suitable spawning habitat probably limits the value of the creek to spawning salmon. The abundance of juvenile cohos in the upper stream suggests that coho salmon may also spawn in Illinois Creek. Such spawning, if it occurs, would probably be in October or November as is typical of coho salmon in the Yukon drainage (U.S. Dept. of Interior 1987).

The groundwater origin of Illinois Creek very likely contributes to its value because of the constant flow, moderate temperature, and possibly mineral rich water.

Illinois Creek (and, by implication, Little Mud River and Mud River) should be nominated for anadromous stream status. There is no question that Illinois Creek provides significant habitat for anadromous salmon.

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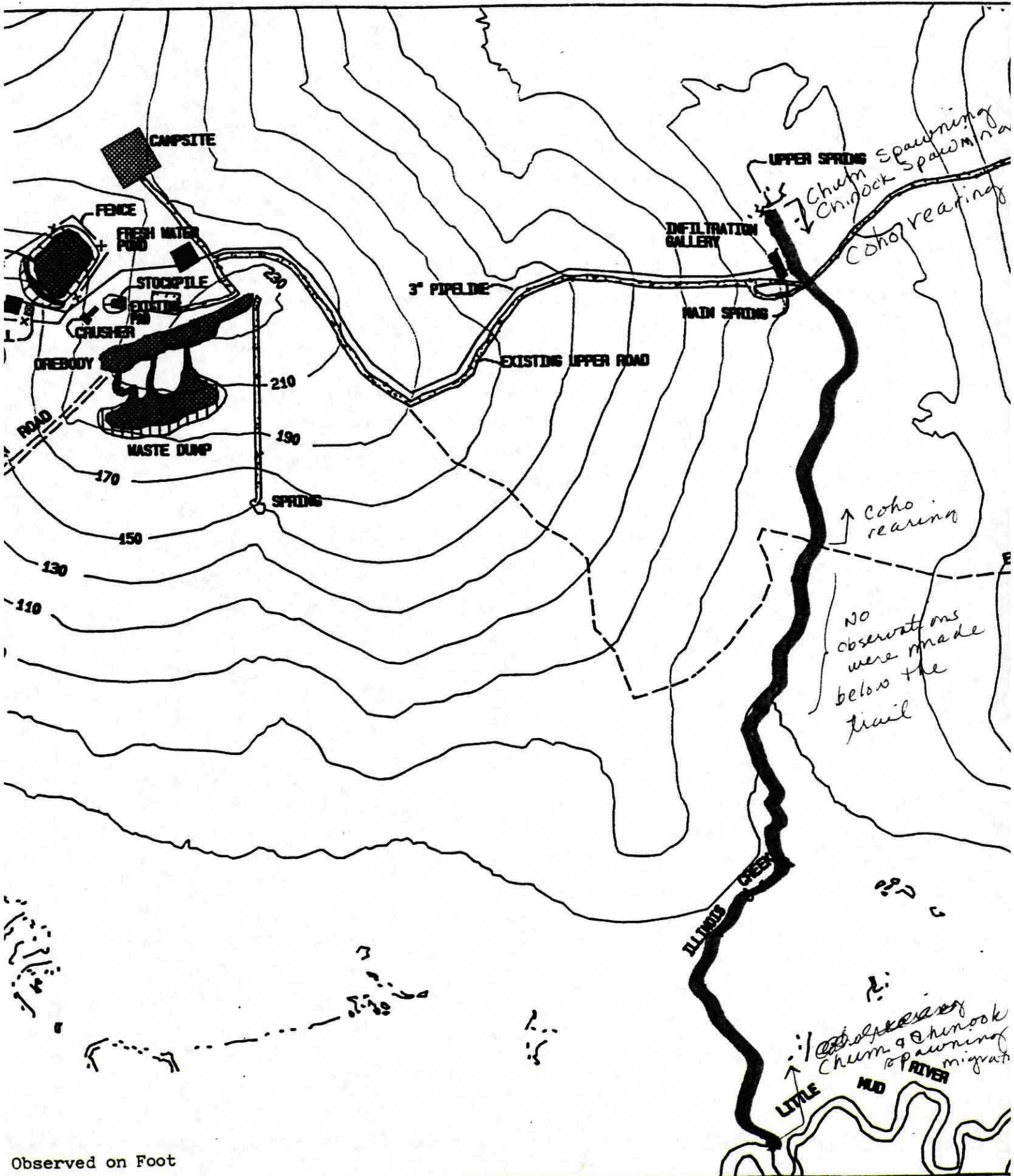
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Observed on Foot

Figure 2. Illinois Creek



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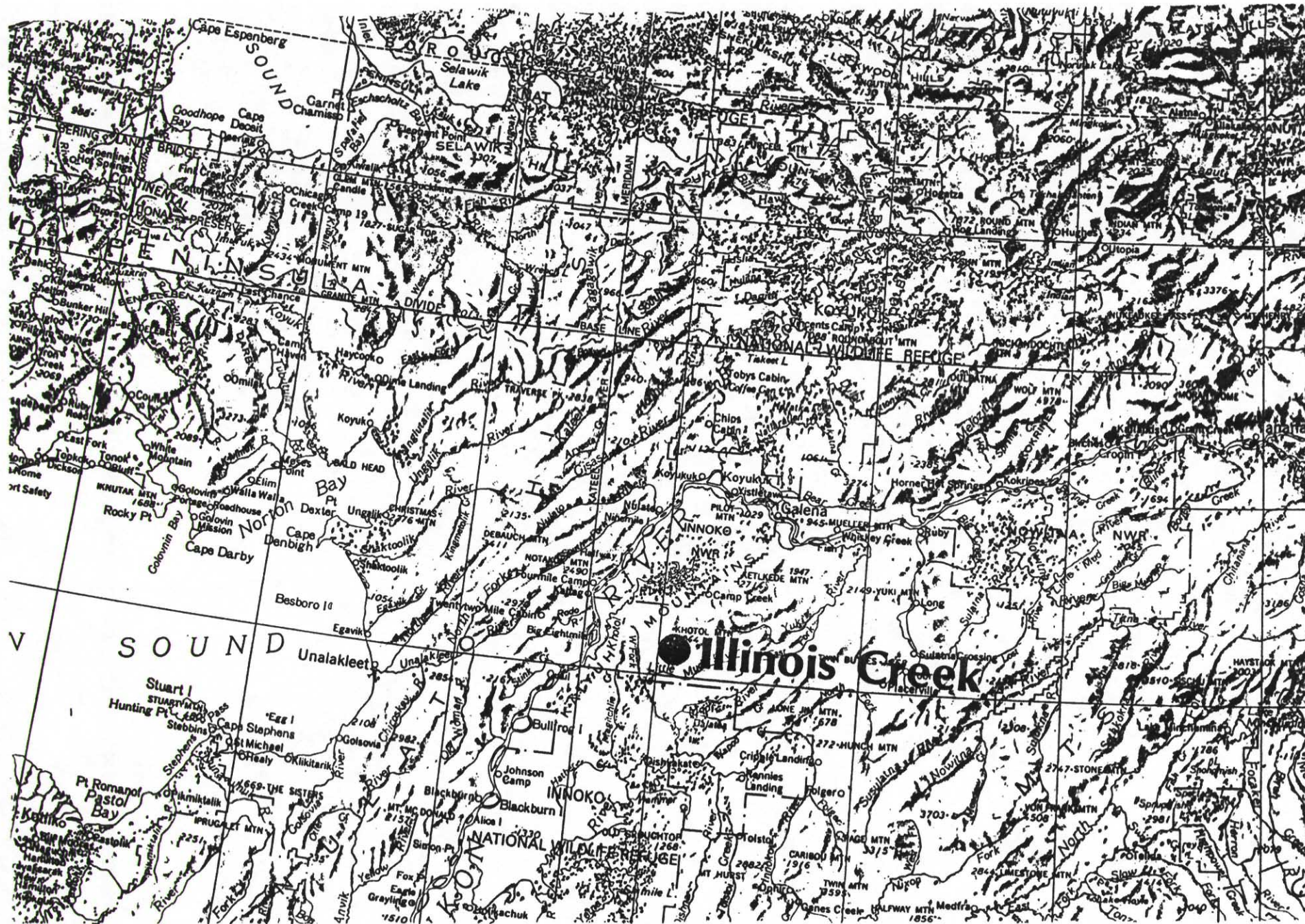
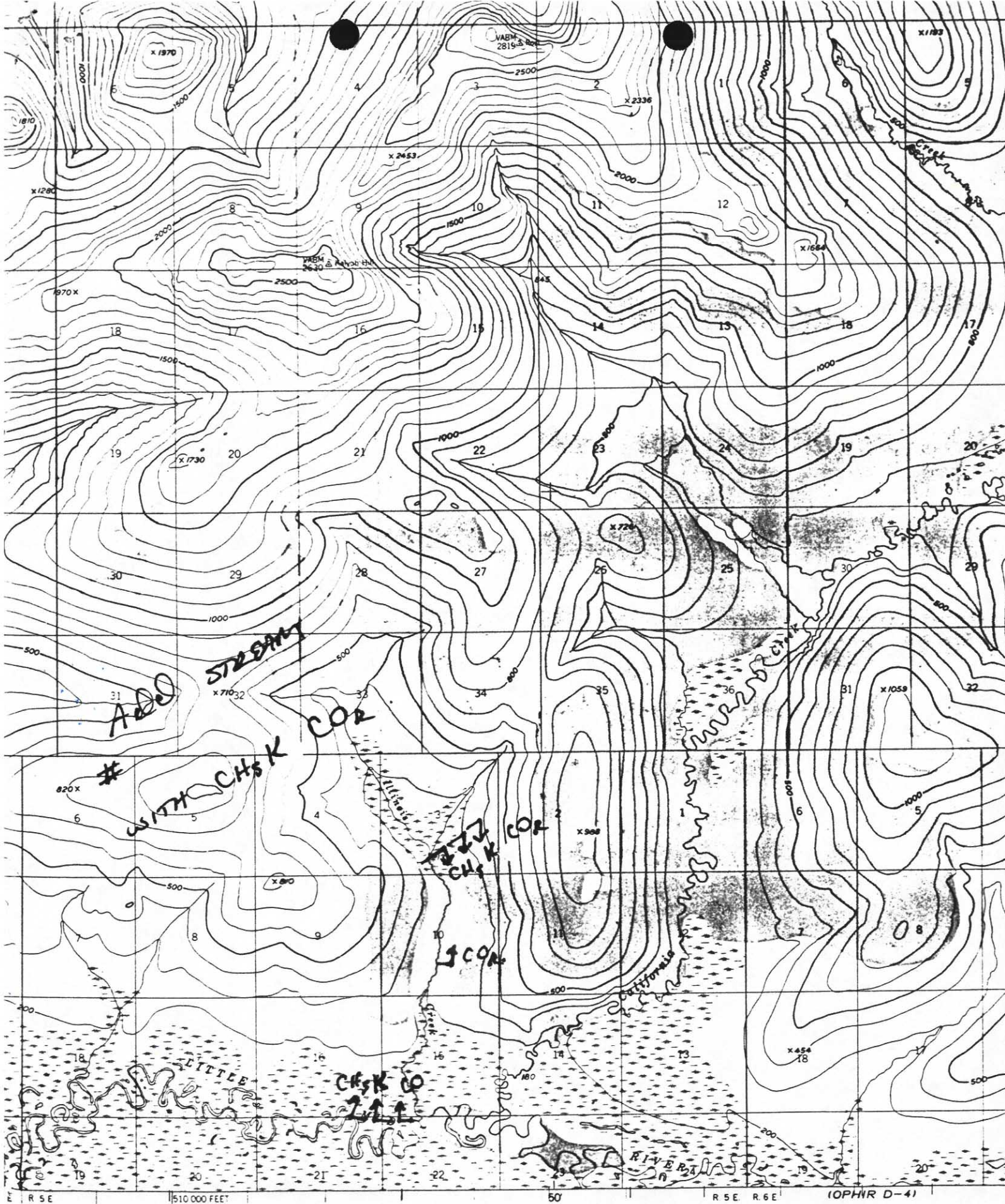


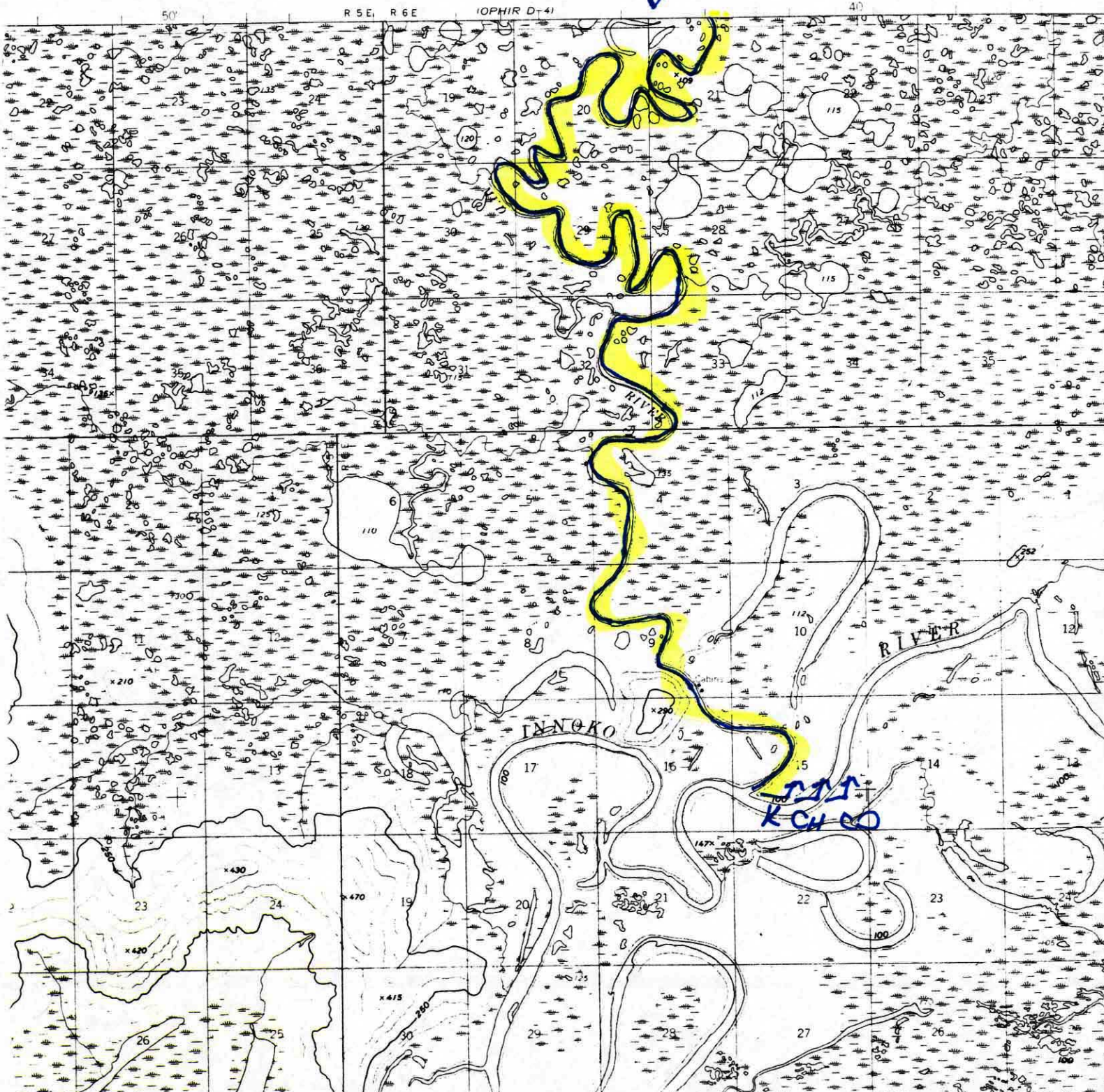
Figure 1. Location of Illinois Creek Project



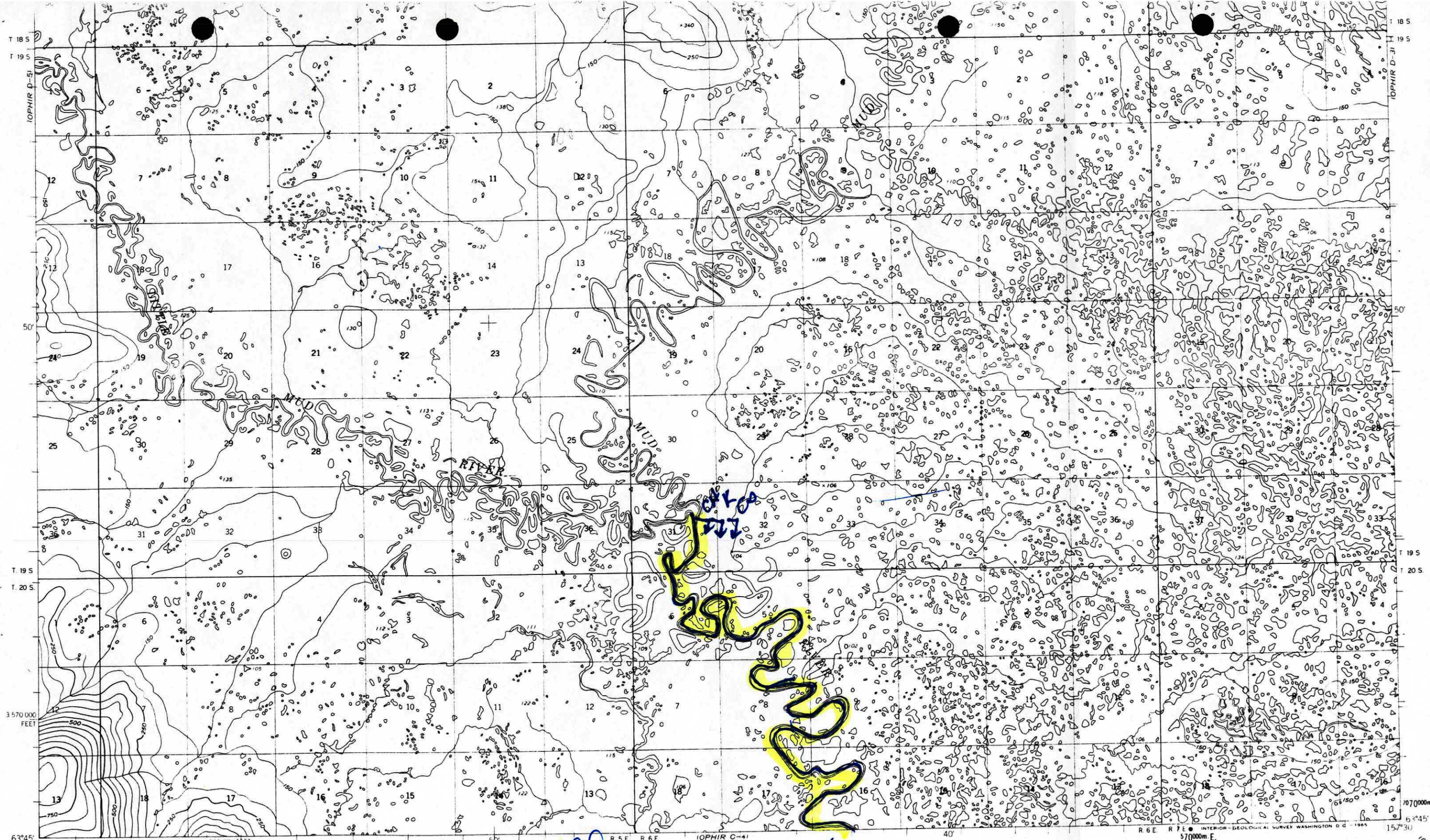




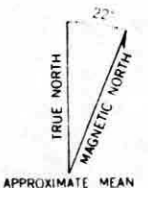
ADD  
STREAM  
334-30-11000-2532-3551  
W/ KCH CO







Maped, edited, and published by the Geological Survey  
Control by USGS and USC&GS  
Topography by photogrammetric methods from aerial photographs  
taken 1953, field annotated 1954. Map not field checked.  
Universal Transverse Mercator projection, 1927 North American datum  
10,000 foot grid based on Alaska coordinate system, zone 6  
1000 meter Universal Transverse Mercator grid lines,  
zone 4, shown in blue.  
Land lines represent unsurveyed and unmarked locations.



ADD  
Stream  
334-30-11000-2532-3551  
w/ CO K CH

CONTOUR INTERVAL 50 FEET  
DATUM IS MEAN SEA LEVEL



ROAD CLASSIFICATION  
No roads or trails in this area  
OPHIR (D-4), ALASKA



State of Alaska  
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Name of Waterway LITTLE MUD RIVER

AWC# of Waterway 334-30-11000-2532-3551  
-4

AWC Volume & Number Interior

USGS Quad OPHIR D-4) D-5 NULATO A-5  
A-4

Addition X A-2 Correction \_\_\_\_\_  
Deletion \_\_\_\_\_ Change \_\_\_\_\_

Change to \_\_\_\_\_ Atlas  
\_\_\_\_\_ Catalog  
X Both

Approved

<u>[Signature]</u>	<u>12-19-91</u>
Regional Supervisor	Date
<u>El Wein</u> 93 002	<u>12/16/92</u>
<u>[Signature]</u>	<u>12/18/92</u>
Drafted	

Species	Date(s) Observed	Spawning	Rearing	Migration
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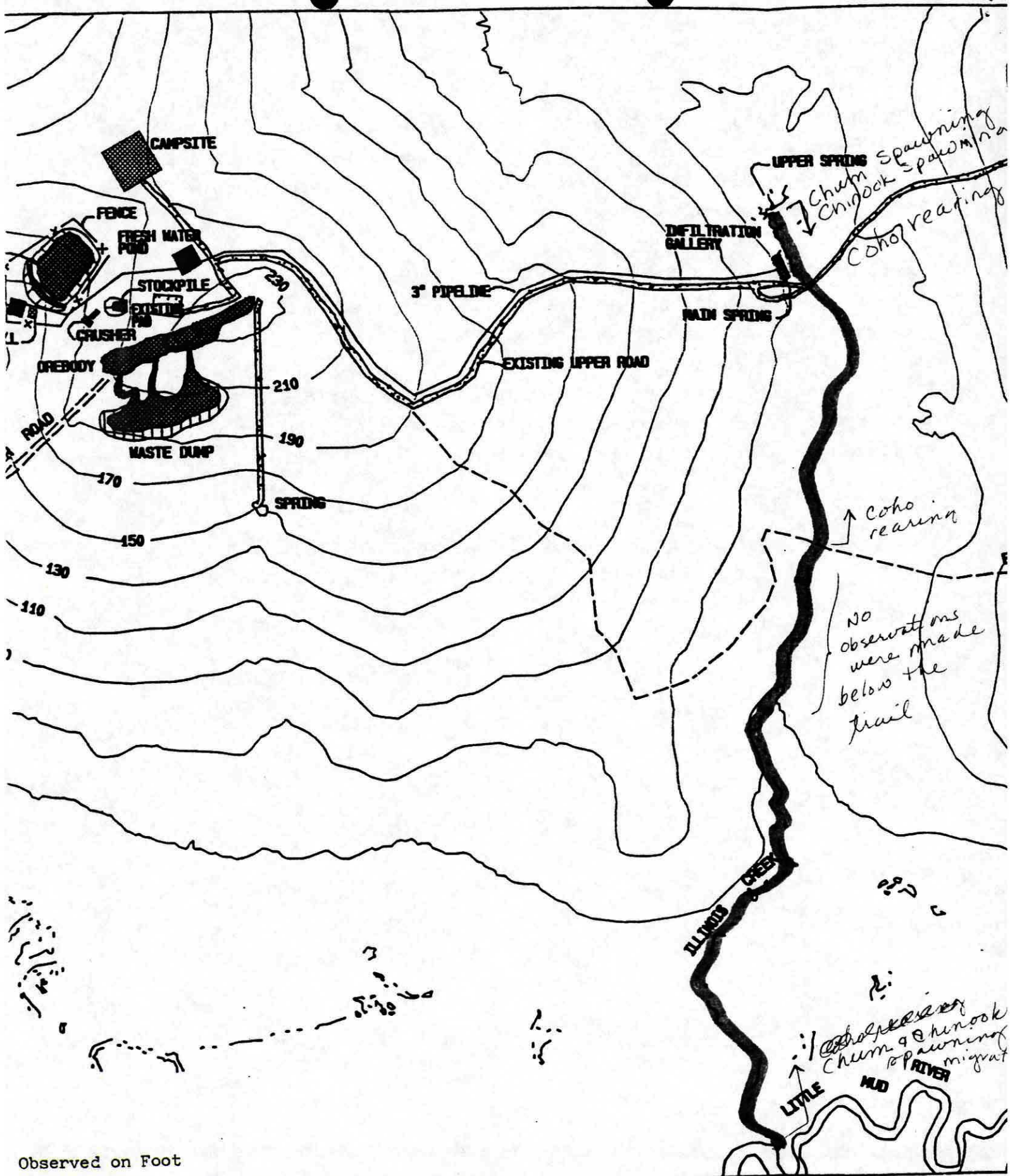


Figure 2. Illinois Creel

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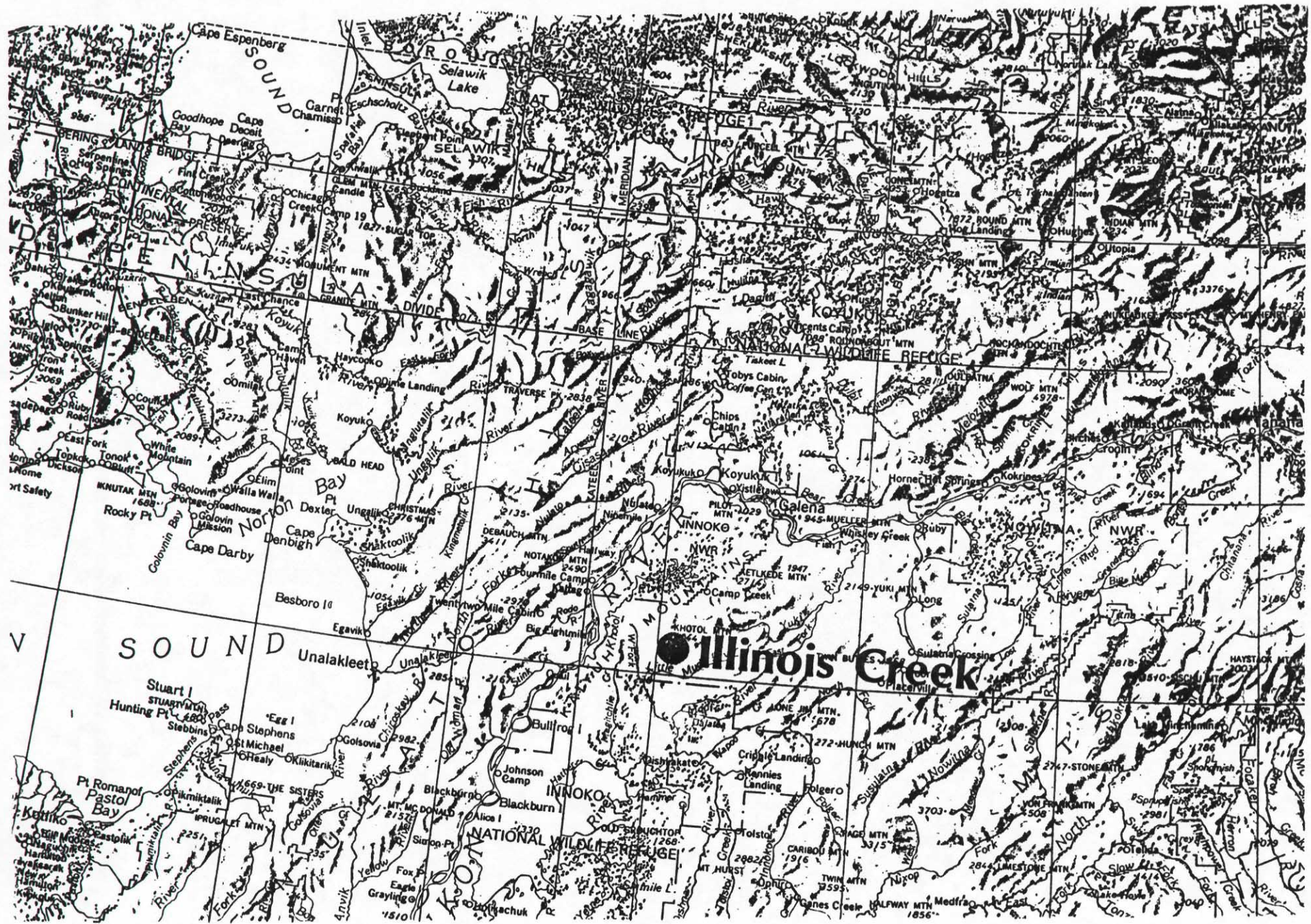
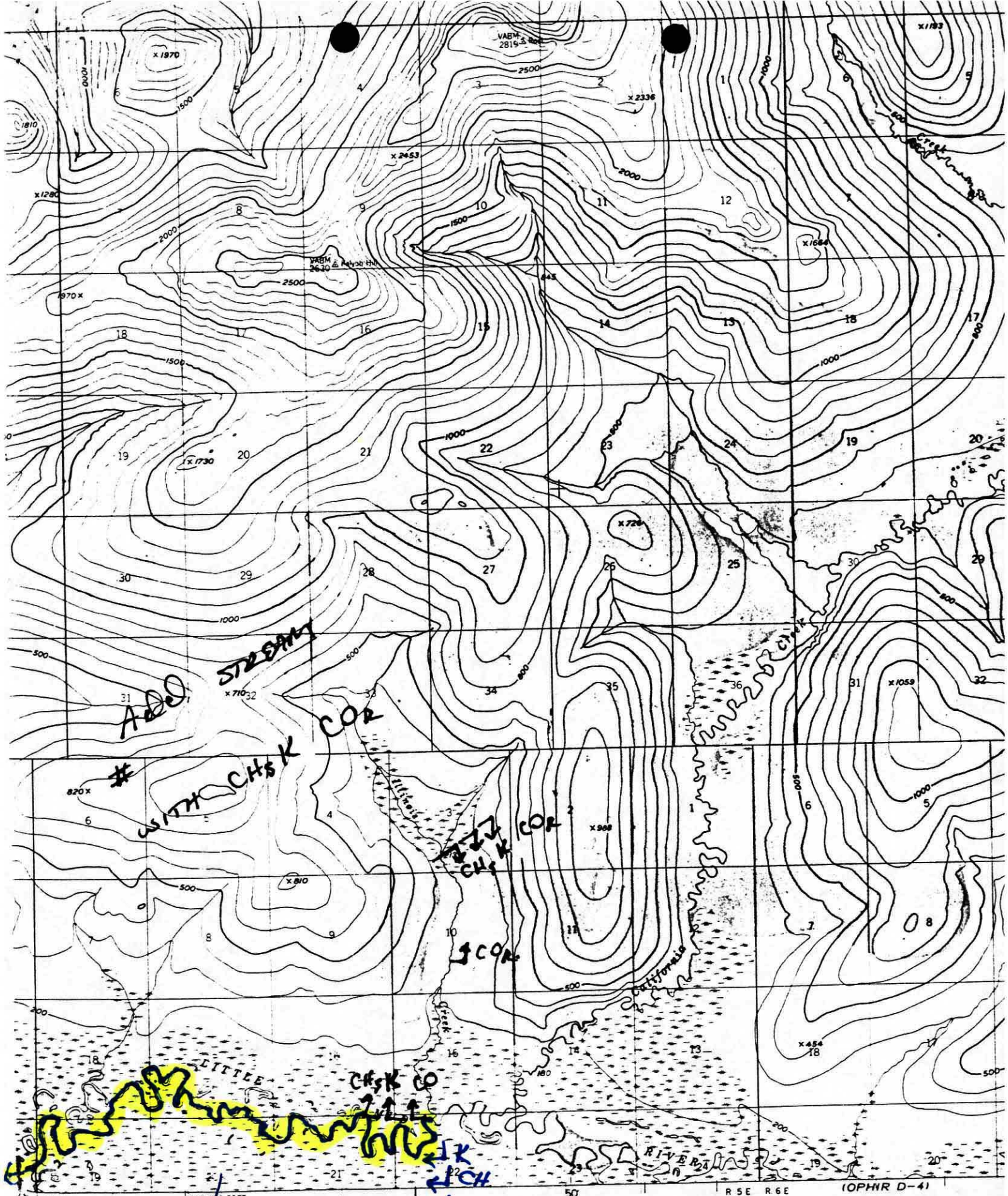


Figure 1. Location of Illinois Creek Project





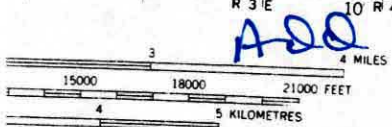
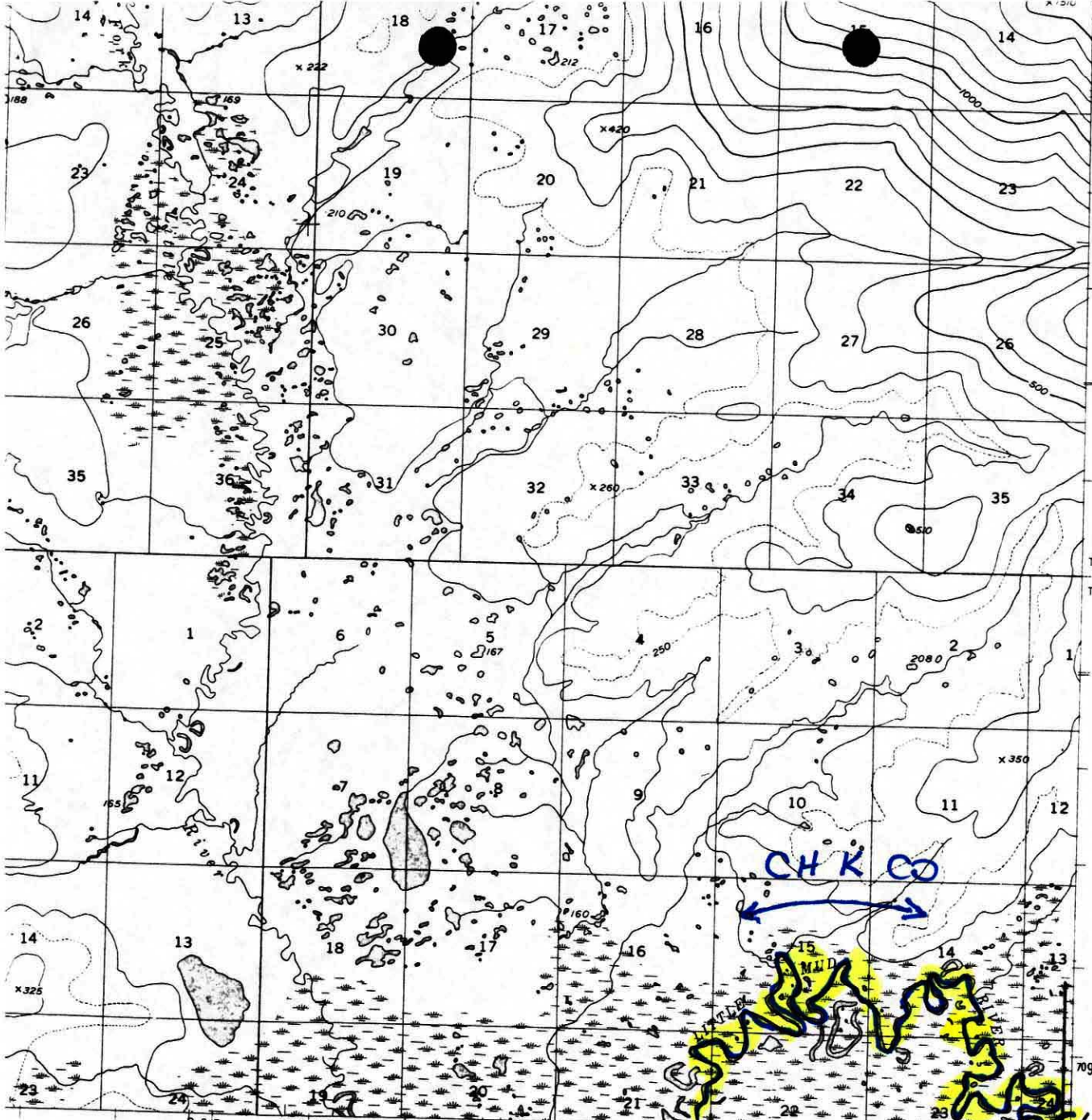
Printed, and published by the Geologic Survey  
SC&GS and USCE  
by photogrammetric methods from aerial photographs  
field annotated 1953 Map not field checked  
inverse Mercator projection 1927 North American datum

334-30-11000-2532-3551-4101

3000 0 3000 6000 9000 12000  
1 5 0 1 2 3

NORTH NORTH





ADD stream 334-30-11000-2532-3551-4101  
 w/ CO K CH  
 158°00' 64°00'  
 548000m.E. 7098000m.N.  
 ROAD CLASSIFICATION  
 No roads or trails in this area



NULATO (A-5), ALASKA  
 N6400-W15800/15X30

1952  
 MINOR REVISIONS 1973

**WATERS CATALOG**  
 ED PURSUANT TO AS 16.05.870 (a)



STATE OF ALASKA

BY	DATE
BB	3/1/03



ADD STREAM

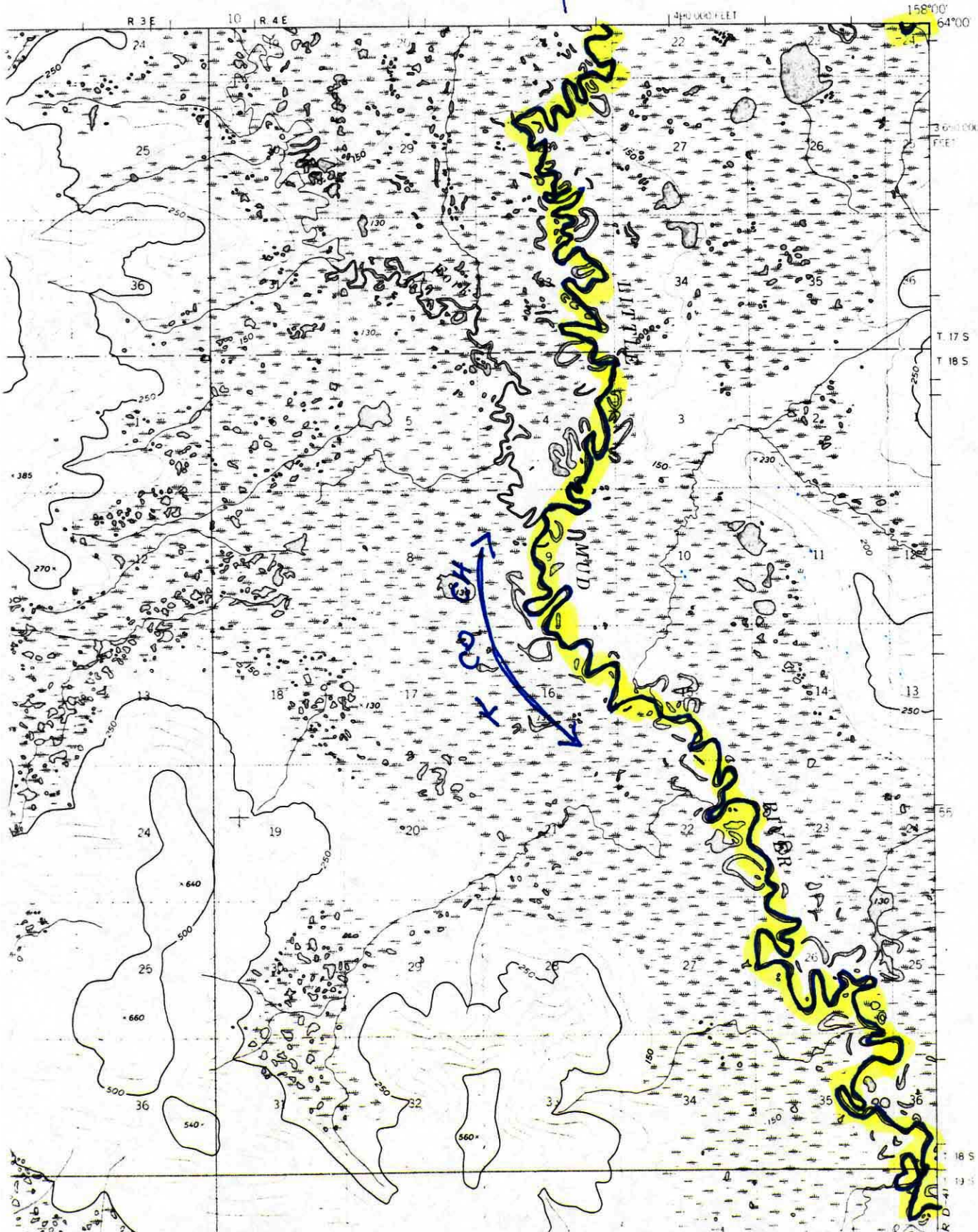
334-30-11000 - 2532-3551-4101

W / CO K CH

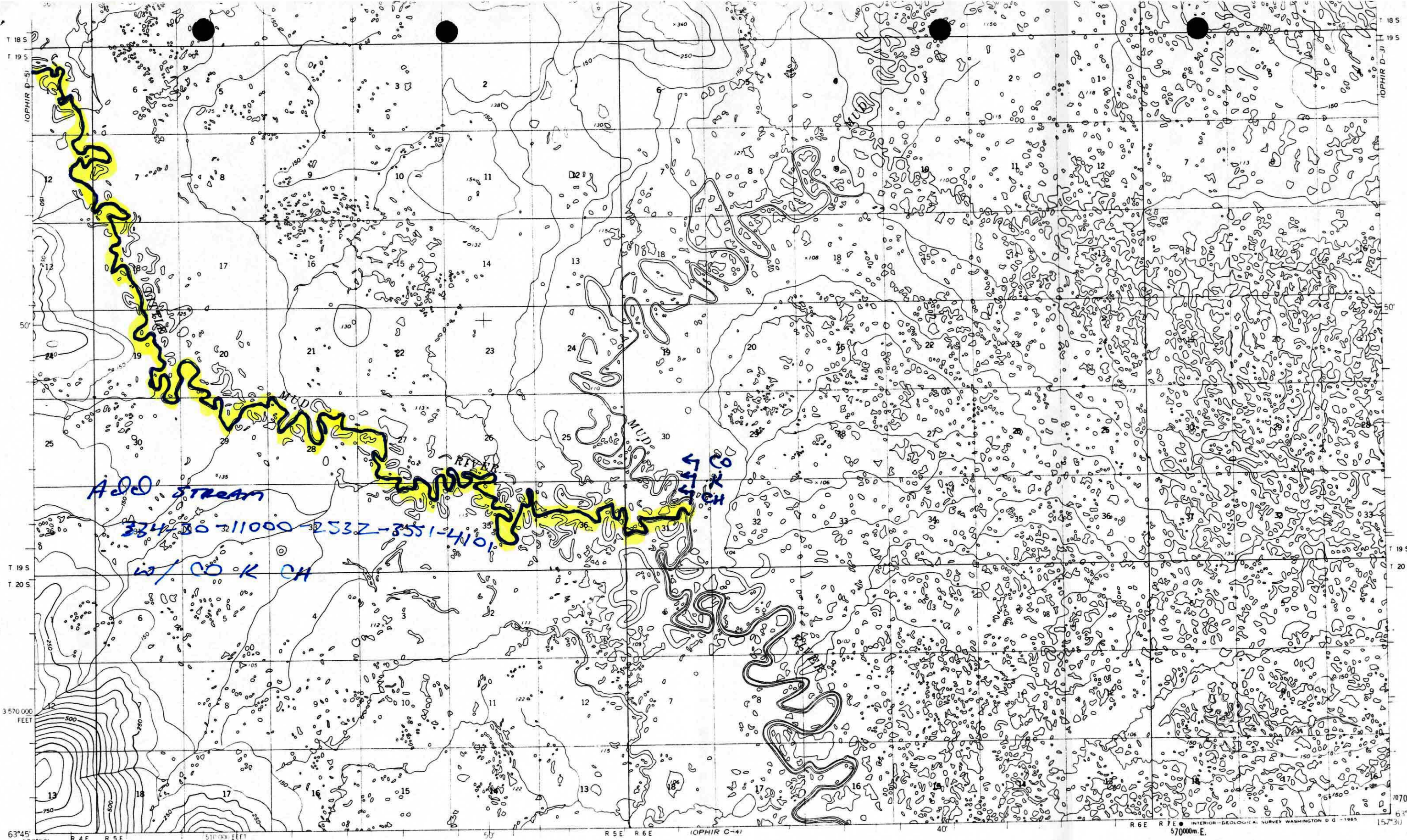
OPHIR (D-5) QUADRANGLE  
ALASKA

1:63 360 SERIES (TOPOGRAPHIC)

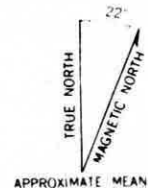
INULATO A-41







Maped, edited, and published by the Geological Survey  
Control by USGS and USC&GS  
Topography by photogrammetric methods from aerial photographs  
taken 1953; field annotated 1954. Map not field checked.  
Universal Transverse Mercator projection; 1927 North American datum.  
10,000 foot grid based on Alaska coordinate system; zone 6.  
1000 meter Universal Transverse Mercator grid ticks;  
zone 4, shown in blue.  
Contour lines represent uncorrected and unmarked locations.



CONTOUR INTERVAL 50 FEET  
DATUM: S. MEAN SEA LEVEL



ROAD CLASSIFICATION  
No roads or trails in this area

OPHIR (D-4), ALASKA